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EXAMINER				
HALL, ASHA J				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/796,299

**Applicant(s)**

SHINGLETON ET AL.

**Examiner**

ASHA HALL

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 and 31-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 31-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 4, 2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1, and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US 4,233,085) in view of Brown et al. (5,885,367).

As to claim 1, Roderick et al. disclose a modular shade system based on a solar panel module (solar panel module, 10) in Figure 1 that comprises: a support structure (frame, 14) defining a first area having a length and a width (i.e., the area encompassed by 14) and a planar array (as depicted in Figure1 & 2) of modular panels (solar units, 20) that are fixed to the units in ways described in column 4 lines 40-49 (specifically excluding "rigid clamping", column 4, line 34) that are

sufficiently flexible to permit removal and/or replacement in modular fashion. Each of said kinds of modular unit has an upper and lower surface, mounted to and supported by the support structure (as illustrated in Figure 1), said modular panels (solar units, 20) covering at least about 80% of the first area (in Figure 1, a real coverage is greater than 90 %), the upper surfaces of the modular panels being exposed surfaces (as shown, the upper surfaces are exposed to incident sunlight, 12). Further, the modular panels (solar units, 20) comprise PV panels acting as a source of electricity (col. 1; lines: 10-13 & col. 4; lines: 55-52) and supplemental panels (20 and their supplements); However, Roderick fails to disclose that the supplemental panels being other than PV panels optionally providing shading.

Brown et al. discloses thin film solar cells (12) as shown in Figure 1 (col. 2; lines: 3-8), and further discloses a flexible reflector panels (14) configured along the edges of the solar panel so to direct the reflected sunlight onto the solar panel (col.2; lines: 8-14). Brown et al. also teaches that the reflector panels function similar to a window shade (col.3; lines: 11-14). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate supplemental reflector side panels as taught by Brown et al. to the photovoltaic panels of modified Roderick et al. in order to function similar to a window shade to direct the reflected sunlight onto the solar panel.

As to claim 2, the system the support structure of Roderick et al. shown in Figure 3 (frame, 14) comprises: a series of generally parallel purlins/horizontal timbers that support the modular panels(52, 53, 54) (col. 6; lines: 5-15); beams (60,70) oriented transversely to said purlins (52, 53, 54). Roderick further discloses generally vertical

column/cross members (60, 70) as shown in Figure 4 secured to and supporting each beam (64,78) (col. 6; lines: 15-20).

4. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US 4,233,085) and Brown et al. (US 5,885,367) as applied to claims 1 above, and in further view of Berman et al. (US 4,663,085).

As to claims 3-7, Roderick et al. disclose all the features of claim 1 above, but fail to teach that the supplemental panels comprise light- transmissive panels, cover about 0 to 50% or 5 to 30 % of the first area, are placed adjacent to one another along a path parallel to the length, comprise light transmissive PV panels, and the PV panels are light-transmissive panels cover at least about 90% of the first area.

Berman et al. disclose a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel,10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). Further, the PV panels of Berman et al. (transparent photovoltaic panel, 10) are light-transmissive PV panels. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the modular shade system of Roderick et al. in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling.

Further, one of ordinary skill in the art would use the appropriate fraction of light-transmissive PV panels of Berman et al. to provide the desired level of illumination to the interior of a dwelling. This includes, but is not limited to, using light-transmissive PV panels to cover 0 to 50 % or 5 to 30 % of the first area defined by the support structure of Roderick et al. in the context of claim 1 above. Finally, one of ordinary skill in the art would also place the light-transmissive PV panels of Berman et al. as needed including placing them adjacent to one another along a path parallel to the length or to cover up to 90 % of the first area defined by the support structure of Roderick et al. in the context of claim 1 above again in order to provide the desired level of illumination to the interior of a dwelling.

5. Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) and Brown et al. (US 5,885,367) as applied to the claim 1 above, and in further view of Marks (US 5,520,747).

As to claim 8, modified Roderick et al. disclosed the shading system subassembly as applied to claim 1 above, but fails to disclose protective panels mounted to the shading system subassembly opposite, spaced apart from and covering the lower surface of the PV modules (20) with the protective panels/insulating panels (67) comprising of a sheet of material/asphalt/tar (col. 7; lines: 3-13). Marks (US 5,520,747)

Marks discloses foldable solar arrays (abstract) and further discloses solar array wherein the solar panels arranged end to end are spaced apart from each other such that a gap is provided between each pair of adjacent solar panels (col. 3; lines: 50-51 & col. 6; lines: 38-41) as shown in Figure 10. Marks also teaches that protective covers are provided for the solar cells, and for the electrical wiring for interconnecting the individual solar cells to collect the power generated by the solar cells and to transfer this power to a spacecraft/device (col. 4; lines: 53-62). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate spaced out solar cells with covers as taught by Marks to the solar cell array of modified Roderick in order to cover the solar cells and electrical wiring, collect it, and then transfer the power to a device.

6. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085), Brown et al. (US 5,885,367), and Marks (US 5,520,747) as applied to the claim 8 above, and in further view of Catella et al. (US 4,611,090).

In regard to claims 9 and 12, modified Roderick et al. disclose the photovoltaic panels of claim 1 above, but fail to disclose the protective cover comprising of sheet metal, perforated sheet metal, plastic, perforated plastic, cement board, perforated cement board, and phosphorescent material.

Catella et al. discloses photovoltaic module assembly (Figure 1) and further explains that the semi-rigid support member (10) and the protective panel that forms a

part of it may be composed of steel, aluminum, plastic (polycarbonate) as to have support and high strength to the structure (column 4, lines: 18-28). Catella et al. also discloses that the protective panels are perforated in the sense that they contain a total of nine holes (see Figure 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the protective panels composed of materials such as steel, aluminum, and plastic (polycarbonate) as taught by Catella et al. to the photovoltaic module assembly of modified Roderick et al. in order to serve as a support and high strength structure.

7. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085), Brown et al. (US 5,885,367), and Marks (US 5,520,747) as applied to the claim 8 above, and in further view of Berman et al. (US 4,663,085).

As to claim 10, Roderick et al. discloses all the features of claim 8, and also the protective panels that have holes between the rib stiffeners (20) that permit some light to pass through as shown in Figure 1. Roderick et al. fails to disclose that the PV modules are constructed to permit some light to pass therethrough.

Berman et al. disclose a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). It would have been obvious to one of ordinary skill in the art at the



time of the invention to provide the light-transmissive solar panel of Berman et al. to the photovoltaic module of Roderick et al. in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling.

As to claim 13, Roderick et al. discloses all the features of claim 8, and also the protective panels al. have holes between the rib stiffeners (20) that permit some light to pass through as shown in Figure 1. Roderick et al. fails to disclose that the PV modules cover at least about 90% of the first area.

Berman et al. disclose a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the photovoltaic module of Roderick et al. in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling. One of ordinary skill in the art would use the appropriate fraction of light transmissive solar panels of Berman et al. in order to provide the desired level of illumination to the interior of a dwelling. This includes, but is not limited to, using light-transmissive solar panels to cover up to 90 % of the first area defined by the support structure of Roderick et al. in the context of claim 1 above.

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8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085), Brown et al. (US 5,885,367), Mark (US 5,520,747) as applied to claims 8 above, and in further view of Nath et al. (US 5,968,287).

With regard to claim 11, the combination of Roderick et al. discloses all the features of claims 8, but fails to disclose that the protective panels lower protective panel surface, at least substantially the entire lower protective panel surface being convex.

Nath discloses a photovoltaic (PV) cell module building panels (Figure 1) (col.1; lines: 6-9) and further discloses an architectural/protective panel (14) that includes a convex central portion onto which a photovoltaic device is to be attached (Figure 1)(since the entire portion is underneath the PV device, this includes the lower portion) which makes the use of (col.1; lines: 59-61), Nath further teaches that the preformed architectural/protective panels (14) would be advantageous since it utilizes minimal hardware and can be utilized for standing building structures (col.2; lines: 43-47). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a convex protective panel as taught by Nath to the PV panels of modified Roderick et al. in order to utilize minimal hardware and can be utilized for standing building structures.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) and Brown et al. (US 5,885,367) as applied to claim 1 above, in view of Blieden et al. (US patent 4,153,813).

With respect to claim 14, modified Roderick et al. discloses all the features of claim 1 above but fail to teach that the supplemental panels comprise phosphorescent panels to provide passive nighttime illumination or that the supplemental panels comprise illuminated panels.

Blieden et al. disclose a luminescent member (16) which consists of a luminescent agent capable of phosphorescence (column 1, line 33-34) that is optically coupled to a photovoltaic cell (18) in Figure 3. Blieden et al. explain that the purpose of said luminescent member is to aid in the collection of low angle incident light (column 1, lines 57-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the luminescent member of Berman et al. to the modular shade system of modified Roderick et al. in order to aid in the collection of low angle incident light. Doing so would automatically provide passive nighttime illumination beneath the support structure of Roderick et al. Finally, panels in said combination of the devices of Roderick et al. and Blieden et al. are illuminated by virtue of their inclusion of the luminescent member.

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) and Brown et al. (US 5,885,367) as applied to claim 1 above, in view of McDonough et al. (US Patent 6,606,823).

As to claim 15, modified Roderick et al. disclose all the features of claim 1 above but fail to teach that the supplemental panels comprise planter panels for planting of plants.

McDonough et al. disclose a modular roof covering system (Figures 1 - 4) that provides a light weight and low cost roof covering that in order to extend the longevity of the environment, manage store water runoff and collect and utilize solar energy (column 1, lines 39-45). McDonough et al. teach that these modules can be used as planter panels for the planting of plants (Figure 2, and instructions regarding planting "vegetation" in the module in column 5, lines 35-41). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modules of McDonough et al. (Figure 2) as supplemental panels in the modular shade system of Roderick et al. in order to extend the longevity of the environment.

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US 4,233,085), in view of Marks (US 5, 520, 747).

As to claim 31, Roderick et al. disclose a photovoltaic assembly (solar panel module 10) comprising: a mounting structure/frame (50); a PV module (20); having upper and lower surfaces (Figure 1), supported by

the mounting structure. Roderick et al. further discloses a protective panel (67) mounted to at least one of the mounting structure (50) and the PV module (20) opposite and covering substantially the entire the lower surface of the PV module (Figures 3 & 4); covering the lower surface (including the entire surface) of the PV modules (20) with the protective panels/insulating panels (67) comprising of a sheet of material/asphalt/tar (col. 7; lines: 3-13). However, Roderick fails to disclose the PV panels spaced apart.

Marks discloses foldable solar arrays (abstract) and further discloses solar array wherein the solar panels arranged end to end are spaced apart from each other such that a gap is provided between each pair of adjacent solar panels (col. 3; lines: 50-51 & col. 6; lines: 38-41) as shown in Figure 10. Marks also teaches that the solar panels may be spaced apart (col. 4; lines: 13-14) and also teaches that the solar panels structure may be folded in an accordion like fashion (col. 2; lines: 50-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate spaced out solar cells with covers as taught by Marks to the solar cell array of Roderick in order that the subassembly may fold in an accordion fashion.

12. Claims 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US 4,233,085) as applied to claim 31 above, and in view of Catella et al. (US 4,611,090).

With respect to claim 32, Roderick et al. discloses thin film solar cells (12) as shown in Figure 1 (col. 2; lines: 3-8), but fails to disclose a solar cell explain that the

semi-rigid support member and the protective panel that is a part of it may be composed of steel, aluminum, plastic (polycarbonate).

Catella et al. discloses photovoltaic module frame (Figure 1) and further explain that the semi-rigid support member (10) and the protective panel that is a part of it may be composed of steel, aluminum, plastic (polycarbonate) which has high material strength (column 4, lines 18-28). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a semi-rigid support member as taught by Catella et al. to the photovoltaic thin film solar cell of Roderick in order to supply high material strength.

In regard to claim 35, Roderick et al. discloses thin film solar cells (12) as shown in Figure 1 (col. 2; lines: 3-8), but fails to disclose the protective panels are perforated in the sense that they contain a total of nine holes.

Catella et al. discloses photovoltaic module frame (Figure 1) and further discloses the protective panels of Catella et al. are perforated in the sense that they contain a total of nine holes (see Figure 1). Catella et al. teaches that each interconnected semi-rigid support member is secured to an adjacent support member with bolts through holes in thickened portion of the skirt (col.8; lines: 40-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate protective panels with holes as taught by Catella et al. to the photovoltaic thin film solar cell of Roderick et al. in order to secure the adjacent support member.

13. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US 4,233,085) and Marks (US 5, 520,747) and as applied to claim 31 above, and in view of Berman et al. (US 4,663,085).

As to claim 33, Roderick et al. as applied to claim 31 above discloses all the features of 31, and further provides that the protective panels have holes between the rib stiffeners (20) that permit some light to pass through. Roderick et al. fails to provide is that the PV modules are constructed to permit some light to pass therethrough.

Berman et al. disclose a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the photovoltaic thin film of Roderick et al. in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling.

14. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US 4,233,085) and Marks (US5,520,747), as applied to claims 31 above, and in further view of Nath et al. (US 5,968,287).

With regard to claim 34, the combination of Roderick et al. discloses all the features of claims 31 respectively, but fails to disclose that the protective panels lower

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protective panel surface, at least substantially the entire lower protective panel surface being convex.

Nath discloses a photovoltaic (PV) cell module building panels (Figure 1) (col.1; lines: 6-9) and further discloses an architectural/protective panel (14) that includes a convex central portion onto which a photovoltaic device is to be attached (Figure 1)(since the entire portion is underneath the PV device, this includes the lower portion) which makes the use of (col.1; lines: 59-61), Nath further teaches that the preformed architectural/protective panels (14) would be advantageous since it utilizes minimal hardware and can be utilized for standing building structures (col.2; lines: 43-47). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a convex protective panel as taught by Nath to the PV panels of modified Roderick et al. in order to utilize minimal hardware and can be utilized for standing building structures.

### ***Response to Arguments***

#### **35 U.S.C. 112 First paragraph**

15. Due to the Applicant's amendment of claim 1, the 35 U.S.C. 112 first paragraph rejection is withdrawn.

#### **Claim Rejection under 35 U.S.C. § 103**

16. As for claim 1, the Applicant argues that it is not obvious over Roderick in view of Brown. Roderick does not disclose a supplemental panel as presently claimed because Roderick teaches that every panel 20 is a PV panel. It would not have been obvious to



add the reflector panel 14 of Brown to the structure of Roderick to arrive at the presently claimed invention because doing so would render reflective panels 14 superfluous.

The Examiner respectfully disagrees. Roderick discloses supplemental PV panels in an modular array fashion, in this case the additional PV panels are the 'supplemental panels'. Brown et al. discloses thin film solar cells (12) as shown in Figure 1 (col. 2; lines: 3-8), and further discloses a flexible reflector panels (14) configured along the edges of the solar panel so to direct the reflected sunlight onto the solar panel (col.2; lines: 8-14). Brown et al. also teaches that the reflector panels function similar to a window shade (col.3; lines: 11-14). Since Brown's reflector panels can function like a window shade, they are interpreted to read on the Applicant's claim limitation that the supplemental panel can provide shading.

17. Due to the amendment of claim 31, new ground(s) of rejection is made in view of Marks (5,520,747).

### ***Conclusion***

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ASHA HALL whose telephone number is (571)272-9812. The examiner can normally be reached on Monday-Thursday 8:30-7:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJH

/A. H./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795